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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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GENERAL ELECTRIC COMPANY
CRD PATENT DOCKET ROOM 4A59
P O BOX 8
BUILDING K 1 SALAMONE
SCHENECTADY, NY 12301

EXAMINER

WESSMAN, ANDREW E

ART UNIT PAPER NUMBER

1742

DATE MAILED: 11/23/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/682,630

Applicant(s)

LIANG ET AL.

Examiner

Andrew E Wessman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

DETAILED ACTION

1. Claims 1-34 are submitted for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Reinacher et al. (3,622,310).

Reinacher et al. anticipates the platinum-rhodium-palladium alloy of the claims (column 2, lines 8-10, and lines 34-38).

In regards to the feature of claim 1, of “essentially free of L_{12} –structured phase at a temperature greater than about 1000°C”, “Where the claimed and prior art products are identical, or substantially identical in structure of composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).” MPEP 2112.01. In this case, the noble metal alloys of Reinacher et al., have the same composition as the noble metal alloys of the claimed invention. The specification also states that “alloys set forth herein as embodiments of the present invention are made using any of the various traditional methods of metal processing and forming” (specification 0045), which clearly indicates the properties of the alloys of the claimed invention are entirely based on composition and not on any particular crystal

structure or processing method. Therefore, because the alloys of the instant invention and the alloys of the prior art have the same composition, they would inherently possess the same properties.

In regards to the feature of claim 2, "wherein said alloy has an oxidation resistance of at least 16 hour-cm²/mg at a temperature of about 1200°C", since the alloys of the prior art have the same composition as the alloys of the claimed invention, the alloys of the prior art would also exhibit the same properties as the alloys of the claimed invention.

In regards to the feature of claim 3, "wherein said alloy has an E-alpha factor less than about 3.6 Mpa/ °C at a temperature of about 1000°C", since the alloys of the prior art have the same composition as the alloys of the claimed invention, the alloys of the prior art would also exhibit the same properties as the alloys of the claimed invention.

In regards to the feature of claim 4, "wherein said alloy has an ultimate tensile strength greater than about 100Mpa at a temperature of 1200°C", since the alloys of the prior art have the same composition as the alloys in the claimed invention, the alloys of the prior art would also exhibit the same properties as the alloys of the claimed invention.

In regards to the features of claims 6-8, wherein the claimed alloys are said to further comprise 0-5 % of a metal selected from zirconium, hafnium, titanium, and mixtures thereof, Reinacher et al. teach the addition of zirconium, hafnium, titanium and mixtures thereof to platinum-rhodium-palladium alloys (column 2, lines 45 to 50).

Reinacher et al. also teach that said additive metals can be added in amounts from 0.1 to 5 %, and that zirconium would be the preferred alloy.

In regards to the feature of claim 8, wherein the claimed alloys are said to further comprise from about 0 to 5% ruthenium, Reinacher et al. teach the addition of ruthenium to platinum-palladium-rhodium alloys that may also contain other elements (column 2, lines 33-35). Reinacher also teach that any platinum group alloy, including ruthenium, could be added in any amount or used as the base metal, and the scope of this disclosure includes the claimed invention.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reinacher et al.

The teachings presented by Reinacher et al. are discussed in paragraph 3.

In regards to the features of claims 10-26, wherein applicant specifies the ranges of platinum, palladium, and rhodium, the specific compositions in the claimed invention fall within the scope of the Reinacher et al. reference. Reinacher et al. specifically discloses platinum alloys that may contain up to 49% of either palladium or rhodium.

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Additionally, Reinacher et al. states that "There can also be employed other metals and alloys of such metals of the platinum group including rhodium, ruthenium, iridium, and osmium" (col. 2, lines 36-38). Any platinum group metal or mixture of platinum group metals may be used as an embodiment of Reinacher et al.'s invention. The specifically disclosed compositions of the instant invention would all inherently fall under the scope of Reinacher et al.'s disclosure. This is also true of any alloy containing ruthenium disclosed in the instant invention, as it is specifically stated in Reinacher et al. that ruthenium would be an appropriate noble metal for use in such noble metal alloys. Also, as Reinacher discloses adding zirconium, hafnium, and titanium in amounts between 0.1 and 5 percent (col. 2, lines 45-51) to any noble metal alloy. Therefore, while Reinacher et al. does not disclose the compositions in the claimed alloy explicitly, Reinacher et al. does teach the use of any noble metal alloy with up to 5% zirconium, hafnium, or titanium and the scope of the prior art disclosure encompasses all of the claimed invention.

In regards to the features of claim 10, applicant claims an alloy of 1 to 41 at % palladium, an amount of platinum dependent upon the amount of palladium and ranging from 41 to 54 at %, and an amount of rhodium from 24 to 85 at %. These ranges fall within or overlap the ranges of the prior art of 0-49% palladium, 0-49% rhodium, and the balance (2-99%) platinum. One of ordinary skill in the art at the time the invention was made would have considered the claimed invention obvious because the alloys taught by Reinacher et al. have compositions which overlap those of the instant claims, In re Malagari, 182 USPQ 549, and MPEP 2144.05.

In regards to the features of claims 11-13, these claims are dependent upon claim 10 and further limit the ranges of claim 10. However, claims 11-13 also claim compositional ranges that lie within or overlap the ranges of Reinacher et al., and therefore the claimed inventions of claims 11-13 would be obvious to one of ordinary skill in the art for the same reasons as the invention of claim 10.

In regards to the features of claim 14, applicant claims palladium from 1 to 41 %, platinum depending on the amount of palladium and ranging from 0 to 54 %, from 0 to 5 % zirconium, hafnium or titanium, from 0 to 5 % ruthenium, and the balance rhodium from 24 % to 85 %. The Reinacher et al. reference teaches palladium from 0 to 49 %, rhodium from 0 to 49%, ruthenium from 0 to 49%, 0 to 5% of zirconium, hafnium, or titanium, and the balance (from 0-99%) platinum. One of ordinary skill in the art at the time the invention was made would have considered the claimed invention obvious because the alloys taught by Reinacher et al. have compositions which overlap those of the instant claims, In re Malagari, 182 USPQ 549, and MPEP 2144.05. In regards to the feature "essentially free of L1₂ -structured phase at a temperature greater than about 1000°C", the prior art alloy of similar composition created by a similar process would inherently have the same properties.

In regards to the features of claim 15, applicant claims a platinum content of 5 to 40% and a rhodium content of the balance (60 to 95%). Reinacher et al. teaches a noble metal alloy with a composition of 1-49% rhodium and the balance platinum. Reinacher et al. also teaches that any noble metal alloy, including a rhodium alloy could be used (col. 2, line 36-38). One of ordinary skill in the art at the time the invention was

made would have considered the claimed invention obvious because the alloys taught by Reinacher et al. have compositions which overlap those of the instant claims, In re Malagari, 182 USPQ 549, and MPEP 2144.05. . In regards to the feature “essentially free of L1₂ –structured phase at a temperature greater than about 1000°C”, claimed invention and the prior art invention, having similar composition and having been created by similar processes, would inherently have the same properties.

In regards to the features of claims 16-18 of adding zirconium, hafnium, or titanium in amounts that can be from 0 to 5%, Reinacher et al. discloses adding between 0.1 to 5% of zirconium, hafnium, titanium, and other similar metals to noble metal alloys. Therefore, it would have been obvious to one of ordinary skill in the art to add the zirconium, hafnium, or titanium to the claimed noble metal alloy as taught by Reinacher et al.

In regards to the feature of claim 19, wherein 0 to 5% ruthenium is added to the noble metal alloy of claim 18, Reinacher et al. also discloses that ruthenium may be used as a noble metal in the noble metal alloys, and that it may be alloyed in any amount from 1 to 49%. Therefore, it would have been obvious to one of ordinary skill in the art to use ruthenium as one of the noble metals in a noble metal alloy as taught by Reinacher et al.

In regards to the features of claims 20 and 21, these claims further narrow compositions specified in claim 19, and as the newly specified ranges are also disclosed by Reinacher et al. the ranges of claims 20 and 21 would have been obvious.

Claims 22-25 further limit claim 15 by specifying minimum values of properties of the claimed alloy. With respect to such properties, the prior art alloys and the alloys of the claimed invention have similar compositions and are created by similar processes, so they would inherently have the same properties.

In regards to the features of claim 26, applicant claims an alloy of 5 to 40% platinum, 0 to 5% zirconium, hafnium, or titanium, 0 to 5% ruthenium, and the balance rhodium. Reinacher et al. discloses alloys of 1 to 49% rhodium, 1 to 49% ruthenium, 0.1 to 5% zirconium, hafnium, or titanium, and the balance platinum. One of ordinary skill in the art at the time the invention was made would have considered the claimed invention obvious because the alloys taught by Reinacher et al. have compositions which overlap those of the instant claims, In re Malagari, 182 USPQ 549, and MPEP 2144.05. In regards to the feature "essentially free of $L1_2$ -structured phase at a temperature greater than about 1000°C", the alloys of the claimed invention and the prior art have similar compositions and are created using similar processes, and would inherently have the same properties.

6. Claims 9 and 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reinacher et al. in view of Selman et al.

Reinacher et al. is discussed in paragraphs 3 and 5.

Reinacher et al. does not teach the use of the disclosed noble metal alloys as parts in gas turbine engines or as turbine engine airfoils.

Selman et al. disclose noble metal alloys of platinum, rhodium, palladium and other refractory metals (abstract). Selman et al. teaches that due to the appropriate high

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temperature properties of such alloys, the alloys would be useful as parts in jet engines or rocket motors (column 4, lines 36-44).

It would be obvious to one of ordinary skill in the art at the time the invention was made to use the alloys of Reinacher et al. in the manner described by Selman et al. because the high temperature type noble metal alloys such as Reinacher et al.'s alloy have long been applied in the aircraft industry as evidenced by Selman et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew E Wessman whose telephone number is (703)305-3163. The examiner can normally be reached on Monday through Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (703)308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

AEW
November 16, 2001


ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700